EXHIBT 1-A

PART 1

Federal Rule of Civil Procedure 26
Disclosure of Expert Testimony
of
William A. Dembski, Ph.D.

Case: *Tammy Kitzmiller, et al v. Dover Area School District and Dover Area School District Board of Directors*

Case No. 04-CV-2688

I. The following includes a complete statement of my opinions to be expressed, the reasons and basis underlying them, and the data and other information considered in forming them.

The Scientific Status of Intelligent Design

1 Preliminary Considerations

Laypersons new to the debate over intelligent design encounter many conflicting claims about whether it is science. A *Washington Post* front page story (March 14, 2005) asserts that intelligent design is "not science [but] politics."[1] In that same story, Barry Lynn, the director of Americans United for Separation of Church and State, claims that intelligent design is merely "a veneer over a certain theological message," thus identifying intelligent design not with science but with religion. In a related vein, University of Copenhagen philosopher Jakob Wolf argues that intelligent design is not science but philosophy (albeit a philosophy useful for understanding science).[2] And finally, proponents of intelligent design argue that it is indeed science.[3] Who is right?

In determining how to answer this question, three points need to be kept in mind:

(1) Science is not decided by majority vote. Can the majority of scientists be wrong about scientific matters? Yes they can. Historian and philosopher of science Thomas Kuhn, in his *Structure of Scientific Revolutions*, documented numerous reversals in science where views once confidently held by the scientific community ended up being discarded and replaced.[4] For instance, until the theory of plate tectonics was proposed, geologists used to believe that the continents were immovable.[5] Intelligent design is at present a minority position within science. But it is a position held by reputable scientists.[6]

(2) Just because an idea has religious, philosophical, or political implications does not make it unscientific. According to the late evolutionist Stephen Jay Gould, "Biology took away our status as paragons created in the image of God.... Before Darwin, we thought that a benevolent God had created us."[7] Oxford University biologist Richard Dawkins claims, "Darwin made it possible to be an intellectually fulfilled atheist."[8] In his book *A Darwinian Left: Politics, Evolution, and Cooperation*, Princeton bioethicist Peter Singer remarks that we must "face the fact that we are evolved animals and that we bear the evidence of our inheritance, not only in our anatomy and our DNA, but in our behavior too."[9] Gould, Dawkins, and Singer are respectively drawing religious, philosophical, and political implications from evolutionary theory. Does that make evolutionary theory unscientific? No. By the same token, intelligent design's implications do not render it unscientific. I myself have explored intelligent design's theological implications, but I have kept such theological reflections separate from my scientific research on intelligent design.[10]

(3) To call some area of inquiry "not science" or "unscientific" or to label it "religion" or "myth" is a common maneuver for discrediting an idea. Physicist David Lindley, for instance, to discredit cosmological theories that outstrip experimental data or verification, calls such theories "myths."[11] Writer and medical doctor Michael Crichton, in his Caltech Michelin Lecture, criticizes the Search for Extraterrestrial Intelligence (SETI) as follows: "SETI is not science. SETI is unquestionably a religion. Faith is defined as the firm belief in something for which there is no proof.... The belief that there are other life forms in the universe is a matter of faith. There is not a single shred of evidence for any other life forms, and in forty years of searching, none has been discovered. There is absolutely no evidentiary reason to maintain this belief. SETI is a religion."[12] Crichton's criticism, however, seems extreme. In the past, NASA has funded SETI research.[13] And even if the actual search for alien intelligences has thus far proved unsuccessful, SETI's methods of search and the possibility of these methods proving successful validate SETI as a legitimate scientific enterprise.[14]

2 What Is Intelligent Design?

Intelligent design is the field of study that investigates *signs of intelligence*. It identifies those features of objects that reliably signal the action of an intelligent cause. To see what is at stake, consider Mount Rushmore. The evidence for Mount Rushmore's design is direct—eyewitnesses

saw the sculptor Gutzon Borglum spend the better part of his life designing and building this structure. But what if there were no direct evidence for Mount Rushmore's design? Suppose humans went extinct and aliens, visiting the earth, discovered Mount Rushmore in substantially the same condition as now.

In that case, what about this rock formation would provide convincing circumstantial evidence that it was due to a designing intelligence and not merely to wind and erosion? Designed objects like Mount Rushmore exhibit characteristic features or patterns that point to an intelligence. Such features or patterns constitute signs of intelligence. Proponents of intelligent design, known as *design theorists*, purport to study such signs formally, rigorously, and scientifically. In particular, they claim that a type of information, known as *specified complexity*, is a key sign of intelligence. An exact formulation of specified complexity first appeared in *The Design Inference* and was then further developed in *No Free Lunch.*[15]

What is specified complexity? Recall the novel *Contact* by Carl Sagan.[16] In that novel, radio astronomers discover a long sequence of prime numbers from outer space. Because the sequence is long, it is *complex*. Moreover, because the sequence is mathematically significant, it can be characterized independently of the physical processes that bring it about. As a consequence, it is also *specified*. Thus, when the radio astronomers in *Contact* observe specified complexity in this sequence of numbers, they have convincing evidence of extraterrestrial intelligence. Granted, real-life SETI researchers have thus far failed to detect designed signals from outer space. The point to note, however, is that Sagan based the SETI researchers' methods of design detection on actual scientific practice.

Many special sciences already employ specified complexity as a sign of intelligence—notably forensic science, cryptography, random number generation, archeology, and the search for extraterrestrial intelligence (SETI).[17] Design theorists take these methods and apply them to naturally occurring systems.[18] When they do, these same methods for identifying intelligence indicate that the delicate balance of cosmological constants (known as cosmological fine-tuning) and the machine-like qualities of certain tightly integrated biochemical systems (known as irreducibly complex molecular machines) are the result of intelligence and highly unlikely to have come about by purely material forces (like the Darwinian mechanism of natural selection and random variation).[19] Accordingly, design in cosmology and biology is scientifically detectable, and intelligent design constitutes a legitimate scientific theory.

3 The Charge of Creationism

Despite intelligent design's clear linkage, both methodologically and in content, with existing sciences that sift the effects of intelligence from undirected natural forces, critics of intelligent design often label it a form of creationism. Not only is this label misleading, but in academic and scientific circles it has become a maneuver to censor ideas before they can be fairly discussed.

To see that the creationist label is misleading, consider that one can advocate intelligent design without advocating creationism. Creationism typically denotes a literal interpretation of the first chapters of Genesis as well as an attempt to harmonize science with this interpretation.[20] It can

also denote the view common to theists that a personal transcendent God created the world (a view taught by Judaism, Christianity, and Islam).[21] In either case, however, creationism presupposes that the world came into being through a creative power separate from the world.

Intelligent design, by contrast, places no such requirement on any designing intelligence responsible for cosmological fine-tuning or biological complexity. It simply argues that certain finite material objects exhibit patterns that convincingly point to an intelligent cause. But the nature of that cause—whether it is one or many, whether it is a part of or separate from the world, and even whether it is good or evil—simply do not fall within intelligent design's purview.

Thus Aristotle, who held to an eternal uncreated world and to a purposiveness built into the world, would today hold to intelligent design but not to creationism.[22] The same is true for Antony Flew, who until recently was the English speaking world's most prominent atheist. He now repudiates atheism because he sees intelligent design as necessary to explain the origin of life.[23] Yet, in embracing an intelligence behind biological complexity, he does not hold to creationism.[24]

Despite its constant repetition, the charge that intelligent design is a form of creationism is false. Robert Pennock and Barbara Forrest, for instance, repeat this charge in virtually all of their writings that criticize intelligent design.[25] Yet, as trained philosophers, they know very well that intelligent design is consistent with philosophical positions that hold to no doctrine of creation. Why, then, do they keep insisting that intelligent design is creationism? The reason is that creationism has been discredited in the courts and among the scientific and academic elite. Thus, if the label can be made to stick, intelligent design will be defeated without the need to investigate its actual claims.

To see that "creationism" is a question-begging label meant to stop the flow of inquiry before it can get started, consider that one of the most prominent critics of intelligent design has himself been called a creationist. That critic is Kenneth Miller. In his book *Finding Darwin's God*, Miller is critical of intelligent design in biology. Nonetheless, in that book he argues for an intelligence or purposiveness that underlies the laws of physics (laws that are necessary for the universe to be life-permitting).[26] Miller's reward for proposing intelligent design at the level of physics and cosmology is to be called a creationist by University of California professor Frederick Crews. In reviewing Miller's book, Crews writes:

> When Miller then tries to drag God and Darwin to the bargaining table [by finding design or purpose underlying the laws of physics], his sense of proportion and probability abandons him, and he himself proves to be just another "God of the gaps" creationist. That is, he joins Phillip Johnson, William Dembski, and company in seizing upon the not-yet-explained as if it must be a locus of intentional action by the Christian deity.[27]

Despite criticisms like this by Crews and others, mainstream physics is now quite comfortable with design in cosmology. Take the following remark by Arno Penzias, Nobel laureate and codiscoverer of the cosmic background radiation: "Astronomy leads us to a unique event, a universe which was created out of nothing, one with the very delicate balance needed to provide

exactly the conditions required to permit life, and one which has an underlying (one might say 'supernatural') plan."[28] Or consider the following insight by well-known astrophysicist and science writer Paul Davies: "There is for me powerful evidence that there is something going on behind it all.... It seems as though somebody has fine-tuned nature's numbers to make the Universe.... The impression of design is overwhelming."[29] Elsewhere Davies adds: "The laws [of physics] ... seem to be the product of exceedingly ingenious design.... The universe must have a purpose."[30] Remarks like this by prominent physicists and cosmologists are now widespread.[31]

Why should inferring design from the evidence of cosmology be scientifically respectable, but inferring design from the evidence of biology be scientifically disreputable, issuing in the charge of creationism? Clearly, a double standard is at work here. Design theorists argue that the evidence of biology confirms a design inference. But even if that confirmation were eventually overturned by new evidence, such a failure would constitute a failure of intelligent design as a scientific theory and not a failure of intelligent design to qualify as a scientific theory, much less to deserve the label creationism.

4 Problems with Evolutionary Theory

Most scientific theories are imperfect in the sense that what they claim about the natural world and what the natural world in fact displays do not match up perfectly. Newton's theory, for instance, predicts certain types of planetary orbits. Nevertheless, the perihelion of Mercury violated this prediction—not by much, but enough to call Newton's theory into question. Ultimately, Einstein resolved this anomaly by replacing Newton's theory with his own theory of General Relativity.

The problem of theories not matching up with facts has been known since the time of the ancient Greeks, who described this problem in terms of "saving the phenomena." In other words, the task of science (known back then as "natural philosophy") was to match up scientific theories with the phenomena (or appearances) of nature. The physicist Pierre Duhem even wrote a book on this topic.[32] He also wrote another book to describe what scientists do when their theories do not match up with the facts.[33] In that case, according to Duhem, they have two options. One is simply to abandon the theory. The other, and by far the more common option, is to add auxiliary hypotheses to try to shore up the theory. Simply put, the second option is to put patches over those aspects of the theory that don't match up with the facts.

Which option is preferable? This is a judgment call. Is the mismatch so egregious and the patch so artificial that the theory cannot be reasonably salvaged? In that case, scientists prefer option one. Has the theory proven itself useful in the past and is the mismatch so minor and the patch so unobtrusive that the theory remains largely intact. In that case, scientists prefer option two. The problem is, as Thomas Kuhn showed in his vastly influential *The Structure of Scientific Revolutions*, that there is no easy way to draw the line between these two options.[34]

Scientists remain divided over what to do about the mismatches between contemporary evolutionary theory and the facts of biology. Nevertheless, the mismatches are there in plain view, as are the patches put on evolutionary theory to mitigate the mismatches. The best known

mismatch is the overwhelming failure of the fossil record to match up with Darwin's expectation that living forms fall within one gigantic, gradually branching tree of life.[35] In fact, the fossil record is full of gaps that show no sign of being bridged.

To see this, one does not need to look to the work of design theorists. Evolutionists have recognized the problem right along. For instance, Stephen Jay Gould, who until his death was the most prominent evolutionary theorist this side of the Atlantic, noted: "The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolutionary trees that adorn our textbooks have data only at the tips and nodes of their branches; the rest is inference, however reasonable, not the evidence of fossils."[36]

Gould's solution to this problem was to propose his idea of punctuated equilibrium, in which evolution takes place in isolated populations that are unlikely to be fossilized, with the result that the fossil record exhibits a pattern of sudden change followed by stasis.[37] But this patch has its own problems. For one, it does not address the mechanism of evolutionary change. Also, it is largely untestable because all the interesting evolution happens where it is inaccessible to scientific observation.

There are many other mismatches between contemporary evolutionary theory and the facts of biology, which I'll leave to my fellow expert witnesses who are biologists to address. Nonetheless, even without specialized biological knowledge, it is possible for laypersons to see that evolutionary theory, as taught in high school and college biology textbooks, is desperately in need of fuller treatment and a more adequate discussion of alternatives.

Right now, the basal biology textbooks from which students receive their first exposure to evolutionary theory explain the origination of biological forms in terms of the neo-Darwinian mechanism of natural selection and random genetic errors. This mechanism, however, is now increasingly seen as inadequate to explain the diversity of biological forms, and not just by design theorists.

For instance, Lynn Margulis, a biologist who is a member of the National Academy of Sciences, criticizes the neo-Darwinian theory as follows: "Like a sugary snack that temporarily satisfies our appetite but deprives us of more nutritious foods, neo-Darwinism sates intellectual curiosity with abstractions bereft of actual details—whether metabolic, biochemical, ecological, or of natural history."[38] Robert Laughlin, a Nobel laureate physicist concerned with the properties of matter that make life possible, offers even stronger criticism:

> Much of present-day biological knowledge is ideological. A key symptom of ideological thinking is the explanation that has no implications and cannot be tested. I call such logical dead ends antitheories because they have exactly the opposite effect of real theories: they stop thinking rather than stimulate it. Evolution by natural selection, for instance, which Charles Darwin originally conceived as a great theory, has lately come to function more as an antitheory, called upon to cover up embarrassing experimental shortcomings and legitimize findings that are at best questionable and at worst not even wrong. Your protein defies the laws of mass action? Evolution did it! Your complicated

> mess of chemical reactions turns into a chicken? Evolution! The human brain works on logical principles no computer can emulate? Evolution is the cause![39]

Note that neither Margulis nor Laughlin are advocates of intelligent design.

These criticisms cut to the very heart of contemporary evolutionary theory and are directly pertinent to how evolution should be taught. Right now, basal biology textbooks reflect a "consensus trance," giving the illusion that there is unanimity among biologists over how evolution occurred when in fact there is no such unanimity.[40] This consensus trance needs to be broken, with alternatives to neo-Darwinism welcomed into high school and college biology curriculums. One such alternative, though by no means the only one, is intelligent design.

5 The Controversy Surrounding Intelligent Design

The controversy surrounding intelligent design occurs at many levels, but it is ultimately a scientific controversy within the scientific community. To be sure, there are educational, political, religious, and philosophical aspects to this controversy, but if there were no scientific controversy here, these other aspects would never have gotten off the ground.

There are a number of ways to see that this truly is a scientific controversy. One indicator is that design theorists are increasingly publishing research supporting intelligent design in the peer-reviewed mainstream scientific literature, especially in the biological literature (see Appendix 3). A related indicator is that their work is increasingly being subjected to criticism within the mainstream scientific literature.[41] And, most importantly, design theorists have a genuine program of scientific research that they are now pursuing with increasing vigor (see Appendix 4).

Despite this, critics of intelligent design argue that intelligent design is not a scientific theory. They do so, however, not by confronting the evidence and logic by which design theorists argue for their conclusions. Rather, they do so by definitional fiat. Essentially, they engage in conceptual gerrymandering, carefully defining science so that conventional evolutionary theory falls within science and intelligent design falls without. This device typically goes by the name of *methodological naturalism* or *methodological materialism*. Eugenie Scott, director of the evolution watchdog group the National Center for Science Education (NCSE), describes methodological materialism as follows:

> Most scientists today require that science be carried out according to the rule of *methodological materialism*: to explain the natural world scientifically, scientists must restrict themselves only to material causes (to matter, energy, and their interaction). There is a practical reason for this restriction: it works. By continuing to seek natural explanations for how the world works, we have been able to find them. If supernatural explanations are allowed, they will discourage—or at least delay—the discovery of natural explanations, and we will understand less about the universe.[42]

There are two problems with this statement. First, if methodological materialism is merely a working hypothesis that scientists employ because "it works," then scientists are free to discard it

when it no longer works. Design theorists contend that for adequately explaining biological complexity, methodological materialism fails and rightly needs to be discarded. Second, and more significantly, in defining science as the search for natural explanations, Scott presupposes precisely what must be demonstrated. If, by natural explanations, Scott simply means explanations that explain what is happening in nature, there would be no problem, and intelligent design would constitute a perfectly good natural explanation of biological complexity. But that is not what she means.

By natural explanations, Scott means explanations that resort only to material causes—as she puts it, to "matter, energy, and their interaction." But that is precisely the point at issue, namely, whether nature operates exclusively by such causes. If nature contains a richer set of causes than purely material causes, then intelligent design is a live possibility and methodological materialism will misread physical reality. Note, also, that to contrast natural explanations with supernatural explanations further obscures this crucial point. Supernatural explanations typically denote explanations that invoke miracles and cannot be understood scientifically. But explanations that call upon intelligent causes require no miracles and give no evidence of being reducible to Scott's trio of "matter, energy, and their interaction." Indeed, design theorists argue that intelligent causation is perfectly natural provided that nature is understood aright.

To say that the intelligent design research program is at odds with the traditional neo-Darwinian theory of evolution is to offer a truism. Less obvious, perhaps, is that this controversy between competing theories is healthy for science, for it renders both intelligent design and neo-Darwinian theory scientifically testable. Unfortunately, the way things stand now, given the artificial exclusion of intelligent design from scientific discussion (as by Eugenie Scott's device of methodological materialism), neo-Darwinian theory has been rendered immune to scientific disconfirmation. In other words, it has become scientifically untestable.

Eshel Ben Jacob, the Maguy-Glass Chair in Physics of Complex Systems at Tel Aviv University in Israel, is troubled by this state of affairs. He writes, "Darwin, a free thinker who dared make far-reaching conclusions based on observations, would have been dismayed to see the petrified doctrine his brainchild has become. Must we admit that all organisms are nothing but watery Turing machines evolved merely by a sequence of accidents favored by nature? Or do we have the intellectual freedom to rethink this fundamental issue?"[43]

The study of biological origins is fundamentally incomplete so long as intelligent design is ruled out as a live option for scientific discussion. Larry Arnhart, who takes a Darwinian approach to ethics and is a critic of intelligent design,[44] nonetheless agrees. According to him, Darwinian evolutionary theory cannot be adequately taught without teaching intelligent design as its proper foil and counterpart.[45]

The integrity of current evolutionary theorizing depends on making room for intelligent design. Darwin himself would have agreed. In his *Origin of Species*, he wrote: "A fair result can be obtained only by fully stating and balancing the facts and arguments on both sides of each question."[46] When it comes to biological origins, intelligent design presents the facts and arguments for one side of this question. To pretend that there is no scientific controversy surrounding intelligent design is therefore itself unscientific.

6 The Scientific Usefulness of Intelligent Design

According to Nobel laureate William Lawrence Bragg, "The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them."[47] Intelligent design is doing just that—discovering useful ways of thinking about and interpreting well-established facts of science that pertain to biological complexity and diversity.

Take the problem of junk DNA. According to the conventional neo-Darwinian theory of evolution, the genome of organisms is cobbled together over a long evolutionary history through a trial and error process of natural selection sifting the effects of random genetic errors. As a consequence, neo-Darwinism expects to find a lot of "junk" DNA, that is, DNA that serves no useful purpose but that is simply carried along for the ride because it is easier for cells to keep copying DNA that genetic errors render useless than to identify and eliminate such DNA from the genome.

The theory of intelligent design, on the other hand, in approaching organisms as designed systems, is less apt to dismiss seemingly useless DNA as junk. Instead, it encourages biologists to investigate whether systems that at first appear functionless might in fact have a function. And, as it is now turning out, seemingly useless "junk" DNA is increasingly being found to serve useful biological functions. For instance, James Shapiro and Richard Sternberg have recently provided a comprehensive overview of the functions of repetitive DNA—a classic type of "junk" DNA.[48] Similarly, Roy Britten has recently outlined the functions of mobile genetic elements—another class of sequences long thought to be simply parasitic junk.[49]

Looking for function in biological systems despite its apparent absence follows from what in Appendix 4 is called the Principle of Methodological Engineering. As is clear from the intelligent design research themes outlined in that appendix, the theory of intelligent design is capable of generating useful insights into biological systems—insights not forthcoming from a purely materialistic conception of evolution such as neo-Darwinism. At the same time, intelligent design is also asking tough questions of conventional evolutionary theory, forcing it to own up to its unsolved problems. David Raup, one of the world's leading paleontologists and a member of the National Academy of Sciences, though a skeptic of intelligent design, regards this as a healthy development. As he puts it:

> [If] some natural biological process, as yet undiscovered, yields the organisms we have without relying solely on conventional natural selection operating on random variation,... then Darwin et al. have found a mechanism that works in simple cases (which it certainly does!) but misses more important mechanisms of evolutionary change and adaptation. The search for the missing mechanisms can only be helped by people like you [i.e., design theorists] asking tough questions. Keep at it![50]

7 *Of Pandas and People*

I have a special interest in the supplemental biology textbook *Of Pandas and People*.[51] Since 1997, I have worked as the academic editor for the Foundation for Thought and Ethics, which publishes this book.[52] Moreover, since the summer of 2001, I have worked on producing the third edition of this book. Not only have I acted as the development editor of the third edition, but I have also become its principal author, rewriting substantial portions of the second edition as well as adding a great deal of new material, much of which I have written myself but some of which I have solicited from Michael Behe and Jonathan Wells (who, along with me, are now coauthors of the third edition, the original authors being Dean Kenyon and Percival Davis). The book has so drastically expanded in size and scope that the third edition is being renamed *The Design of Life: Discovering Signs of Intelligence in Biological Systems*. It is due to be published this year (2005).

Having worked so closely in revising, expanding, and updating the second edition of this book, I feel I know it better than anyone. It is clear that the book is now dated. Indeed, the first edition was published in 1989 and the second edition (published in 1993) involves only minor changes in relation to the first edition.[53] *Of Pandas and People* was and remains the only intelligent design textbook. In fact, it was the first place where the phrase "intelligent design" appeared in its present use. Since the second edition of this book, intelligent design has gone from a small and marginalized challenge confronting neo-Darwinian evolution to a comprehensive scientific research program for reconceptualizing biology (cf. Appendix 4).

Despite the book's age, it provides a valuable contribution to the high school biology curriculum. This is because both the criticisms it offers against neo-Darwinian theory and the evidences it provides in favor of intelligent design continue to stand—the book is accurate. To be sure, the discussion over intelligent design has progressed substantially since the book's publication back in the early 1990s. But precisely because the mainstream basal biology textbooks have for the past decades entirely ignored this discussion, the book's criticisms of neo-Darwinism and its evidences for intelligent design continue to advance the teaching of high school biology.

It also helps, as a pedagogical aid, that *Of Pandas and People* is age-appropriate. Although a few isolated places in the later excursion chapters may be challenging for some ninth and tenth graders, most of the book is readily accessible. Moreover, the long overview chapter at the beginning is user-friendly and ideally suited for all high school students. Bottom line: This book has something of scientific value for all high school biology students.

8 The Dover Area School District Statement

The Dover Area School District Statement makes five points that are directly relevant to what high school students in the Dover area will learn from taking high school biology:

(1) It indicates that with regard to biological origins, students will only be required to learn about Darwin's theory of evolution.

(2) It states that scientific theories are not facts and that there are problems ("gaps") with Darwinian theory.

(3) It states that intelligent design is an explanation of the origin of life.

(4) It informs students that *Of Pandas and People* is an intelligent design textbook and is available in the school library for their perusal.

(5) It leaves the discussion of the origin of life to individual students and their families.

Point (1) is legally unproblematic, though given what was said in sections 4, 5, and 6 of this report, a sound high school biology education should open up the class discussion beyond merely Darwin's theory of evolution. As for point (2), it is common knowledge that theories are not identical with facts. Moreover, Darwin's theory (even in its contemporary neo-Darwinian form) has serious problems (or "gaps") that are not being adequately addressed in high school biology curricula. This last concern was raised in section 4 of this report and has been thoroughly documented by Jonathan Wells.[54]

Point (3) is correct but inaptly stated. The theory of intelligent design certainly addresses the origin of life, but it is not limited to the origin of life—it also explains the subsequent diversification of life. Moreover, it provides a *scientific* explanation for the origin and diversification of life (as opposed to a religious or philosophical explanation). This is the main issue that critics of intelligent design dispute, namely, intelligent design's scientific status. Nonetheless, the case for the legitimacy of intelligent design as a scientific explanation and as an alternative to neo-Darwinian theory is overwhelming (see sections 2, 5, and 6 as well as Appendices 3 and 4 of this report). Point (3) is fine as far as it goes, but it does not go far enough.

Point (4) is straightforward. The key issue it raises is one of appropriateness: is it appropriate within a biology class to list, as a recommended text, one that argues for the design of biological systems? Clearly, the appropriateness will depend on intelligent design's legitimacy as a scientific theory, which passes off the appropriateness of (4) to the correctness of (3). And (3), as I have argued, is correct (though a more complete statement of (3) is to be preferred).

Finally we come to point (5). This point, ironically enough, is at once misconceived and unproblematic. It is misconceived because most basal biology textbooks do touch on the origin of life, recounting primitive earth simulation experiments that purport to show how the building blocks of life might plausibly have originated.[55] Because biological evolution presupposes the origin of life, a sound biology education cannot cordon off one from the other. At the same time, there is no well-developed theory of life's origin; rather, there are numerous proposals, none of which holds sway and all of which constitute at best wildly speculative scenarios.[56] This state of affairs is reflected in how little space basal biology textbooks typically devote to the origin of life (the focus tends to be much more on the subsequent diversification of life). Thus, leaving the discussion of life's origin to individual students and their families makes little if any difference to the high school biology curriculum.

II. My qualifications as an expert witness are as follows:

See my curriculum vitae in Appendix 1 as well as the announcement of my winning the Trotter Prize in Appendix 2. Past recipients of that prize have included Charles Townes and Francis Crick, both Nobel laureates. Townes received the Nobel Prize in physics and Crick in biology.

III. The compensation I will receive for my study, case preparation, and testimony in this matter is $200.00 per hour. All travel expenses will be billed at cost.

IV. Prior expert witness testimony/experience:

In the last four years, I have not been an expert witness in any legal proceeding. In that time, I have not testified at any trial, I have not been deposed, and I have not written any expert witness reports. I have, however, testified before the Texas State Board of Education (September 10, 2003, Austin, Texas) regarding basal biology textbook adoptions. In my testimony, I stressed the need to remove inaccuracies from these texts and for these texts to admit weaknesses in neo-Darwinian theory. My testimony before the Texas State Board of Education can be found in Appendix 5.

Signed: William A. Dembski **Date:** March 30, 2005